

What Is Claimed Is:

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5 1. An end shield for a hydraulic pump-motor of the type having a motor mechanically linked to a pump and a housing surrounding the pump and motor, the housing having first and second open ends, the pump closing the first open end, the end shield closing the second open end, the end shield comprising:

10 a metal annular ring secured to the motor housing, the ring being attached via bolts securing the motor to the housing; and

15 a plastic end plate secured to the metal annular ring and substantially closing the second open end.

20 2. The end shield of Claim 1 wherein the plastic end plate includes first and second layers, the metal annular ring being sandwiched between the first and second layers, the plastic layers being secured to the annular ring before attachment of the annular ring to the housing.

25 3. The end shield of Claim 1 wherein the annular ring has an outer circumference and a plurality of downwardly depending fingers positioned to frictionally engage an inner surface of motor housing.

30 6. *f.* The end shield of Claim 2 wherein the annular ring includes an annular ridge positioned to engage outer circumferences of the first and second layers and thereby prevent lateral movement of the end plate relative to the motor.

35 7. *g.* The end shield of Claim 2 wherein the first and second layers are secured together by at least one fastener.

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6. The end shield of Claim 1 wherein the end plate

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includes first and second layers, the second layer including a plurality of radially extending arms, the annular ring including a corresponding number of slots, the arms adapted to be received through the slots and 5 rotated along with the first layer relative to the annular ring to removably lock the end plate in position.

8. ⁴ f. The end shield of Claim ⁸ wherein the slots 10 included plurality of raised edges to serve as locking tabs to prevent inadvertent removal of the end plate.

9. ⁴ g. The end shield of Claim ⁶ wherein the first and 15 second layers are secured together by at least one fastener.

9. The end shield of Claim 1 wherein the end plate includes first and second layers, the second layer 20 including a plurality of elastically deformable and radially extending arms, the arms adapted to be deformed under the annular ring to secure the end plate to the motor.

10. The end shield of Claim ⁹ wherein the first 25 and second layers are secured together by at least one fastener.

11. A hydraulic pump-motor, comprising:
30 a housing enclosing a motor mechanically linked to a pump, the housing having a substantially cylindrical shape, the pump closing one open end of the housing; and an end shield closing an end of the housing opposite the pump, the end shield being manufactured from a sound attenuating material.

35 12. The hydraulic pump-motor of Claim 11 wherein the sound attenuating material is cast iron, the cast

iron end plate having a substantial mass disposed centrally and extending into the housing.

13. The hydraulic pump-motor of Claim 11 wherein
5 the sound attenuating material is plastic, the plastic
end plate having a substantial mass disposed centrally
and extending into the housing.

14. The hydraulic pump-motor of Claim 11 wherein
10 the sound attenuating end shield is manufactured from a
metal outer ring rigidly attached to the housing, and a
plastic plate attached to the metal outer ring.

15. The hydraulic pump-motor of Claim 11 wherein
the sound attenuating end shield is manufactured from a
plastic outer ring rigidly attached to the housing, and
a plastic plate attached to the plastic outer ring.

16. A method of assembling an end shield to a
20 hydraulic pump-motor of the type having a motor
mechanically linked to a pump in a housing surrounding
the pump and rotor, the housing linking first and second
open ends, the pump closing the first open end, the end
shield closing the second open end, the method
25 comprising the steps of:

securing an outer ring to the second open end of the housing about the circumference of the housing using fasteners which also secure a stator to the housing;

measuring and adjusting an air gap between the
30 stator and a motor provided within the stator;

securing the end shield to the outer ring after the air gap is correctly set.

17. The method of Claim 16 wherein the end shield includes a plurality of radially inward, and downwardly depending, fingers adapted to frictionally engage an inner circumference of the outer ring to provide an

interference fit, and wherein the securing end shield step includes the step of fastening the end shield to the outer ring fasteners.

5 18. The method of Claim 16 wherein the end shield includes top and bottom layers wherein the top layer has an outer circumference greater than an inner circumference of the outer ring, the bottom layer includes a plurality of radially extending arms adapted 10 to fit into a plurality of slots provided in the inner circumference of the outer ring, and the securing the end shield step includes the steps of inserting the arms into the slots and rotating the end shield such that the outer ring is placed between the arms and the top layer.

15 19. The method of claim 16 wherein the end shield includes top and bottom layers wherein the top layer has an outer circumference greater than the inner circumference of the outer ring, the bottom layer 20 includes a plurality of radially extending and elastically deformable arms, and the securing the end shield step includes the step of elastically deforming the arms to extend under the outer ring such that the outer ring is placed between the arms and the end shield 25 top layer.

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